

THE CLAIMS

We claim:

1. A pneumatic engine for toy vehicles, comprising:

(a) a selectably inflatable compressed air canister;

(b) an intake manifold, comprising:

an engine air inlet, in fluid communication with said air canister, the inlet including means for providing compressed air to said canister through said manifold;

(c) a cylinder housing including:

(i) distal and proximal regions thereof,

(ii) an inlet in fluid communication with said engine air inlet,

and (iii) at said proximal region, a plurality of air exhaust apertures;

(d) a one-way check valve including a proximal element, reciprocally situated at least partially within said inlet of said cylinder housing, said check valve residing in a normally closed position relative to said inlet;

a (e) a piston slidably mounted along a longitudinal axis of said housing in a fluid-tight relationship relative to internal circumferential walls of said distal region of said cylindrical housing, said piston including an axial member projecting distally toward said cylinder housing inlet and proportioned in diameter for insertion therein, said piston having a substantially concave proximal surface thereof;

(f) a piston spring mounted about said axial member of said piston and having a length greater than said axial member and, thereby, at a distal end thereof, having a length sufficient to effect selectable contact with a proximally directed element of said check valve during intervals of high pressure between said piston and said cylinder housing;

(g) a connecting rod having a distal end proportioned for complementary non-rigid mechanical interface with said proximal surface of said piston;

(h) an eccentric rotationally mounted to an engine power delivery shaft, said eccentric rotatable secured to a proximal end of said connecting rod, in which rotation of said eccentric by said rod will transmit angular momentum and force to said system power shaft,

whereby reciprocation of said connecting rod by said eccentric will increase pressure between a distal side of said piston and enclosed internal portions of said cylinder housing and will compress said piston spring against said proximal element of said check valve, thereby imparting potential energy to both said spring and compressed air within said cylinder and, further whereby, at maximum of distal reciprocation, said proximal element of said check valve will urge open relative to said inlet of said cylindrical housing, thereby effecting a brief high pressure input of compressed air from said canister, through said intake manifold and into said distal region of said cylindrical housing, said high pressure air input thereby initiating expansion of said piston spring and movement of said piston toward said proximal region of said cylinder housing, the same causing reiterative cycles of reciprocation of said piston, connecting rod, cam, and engine power shaft.

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2. The engine as recited in Claim 1, in which said intake manifold and air canister comprise means for complementary positive mechanical securement therebetween which ensures said fluid communication of said air inlet with said air canister.

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3. The engine as recited in Claim 2, in which securement means include a radial cap of said intake manifold having thread means for securement to said canister and an elastomeric seal seated between said intake manifold and said canister.

add A3
add B1

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